Technical Assistance for Public Water Systems

The Idaho DrinkingWater Newsletter

Department of Environmental Quality Idaho Drinking Water Program

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EPA considers TCR changes/New PN deadlines in effect

Coliform Bacteria in Drinking Water

This issue of the newsletter takes a new look at a topic that has been around for quite a while – coliform bacteria in drinking water.

Idaho adopted the Total Coliform Rule (TCR) more than a decade ago. This rule uses routine monitoring for coliform bacteria to assess the microbiological safety of water in the distribution system of a public water supply. For all but the largest systems, more than one positive sample in a monitoring period constitutes an MCL violation.

Recent regulatory developments would seem to indicate that a review of this subject might be timely and useful for Idaho's public water systems.

What's new about coliforms and the TCR?

EPA has changed public notification (PN) times for Total Coliform Rule violations.

- A new Public Notification Rule took effect in May of 2002. This rule changed the time allowed (see below) for a water system to post public notice of TCR violations.

Deadlines for Public Notices: Comparison between 1987 and 2000 Rules	
Acute violations (Tier 1)	**Non-acute violations (Tier2)**
Old 1987 Rule: 72 hours ***New 2000 Rule: 24 hours***	*Old 1987 Rule: 14 days* ***New 2000 Rule: 30 days***

- EPA's Public Notification Handbook provides sample public notices that differ in some ways from those that have been used in Idaho.

- EPA announced in June that it might revise the TCR in the next year or two. A final decision is pending.

What do the changes in public notification requirements mean?

The changes in public notification requirements reflect a growing consensus among professionals in the drinking water field regarding the public health significance of TCR violations:

- ***Acute MCL violations,*** involving detection of fecal coliform or *E. coli*, are an indication of serious public health risk. Public notice must be issued within 24 hours and include a strongly worded boil advisory.

- ***Non-Acute MCL violations,*** involving detection of total coliforms only, are a signal that prompt action should be taken in the area of water system management and operations (such as disinfection and flushing, identification and elimination of possible sources of environmental contamination, and calibration or repair of treatment equipment). However, it is now widely believed that public notification of these events should not convey undue alarm about health risk, as long as further sampling does not detect the presence of fecal coliforms or *E. coli*.

  The community at large should not be advised to boil the water unless unusual circumstances cause elevated concern about its safety. Sub-populations at risk from opportunistic infection, such as some elderly persons, families with infant children, and people with compromised immune systems may need to take precautions.

Why is EPA thinking about revising the TCR?

EPA is required by the Safe Drinking Water Act to review all existing drinking water regulations every six years and decide if changes are needed. Potential revisions to the TCR are being considered based on the following observations:

- Over the years, it has become apparent that a number of important distribution system issues are not addressed by the TCR rule. These include cross-connection control programs, deterioration of buried infrastructure, and effects of water age on distribution system water quality.

- State regulators and water system operators have suggested to EPA that sampling requirements may be excessive, referring to the five routine samples that are required in the month following a "hit."

- Some interest groups believe that only fecal or *E. coli* detections should warrant an MCL violation.

If the rule is ultimately revised, these and other issues will be up for discussion. See next page for additional resources.

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Coliform Bacteria *Continued from page 1*

Additional Resources

- ✓ This issue of the newsletter includes a **fact sheet about coliform bacteria** (see page 3) that may be distributed to water system customers to assist them in understanding and reacting to public notices. Also included are recommendations on how your customers can disinfect their water during a boil advisory (see "Emergency Disinfection" next column).
- ✓ **Sample public notices** have been posted on DEQ's web site at ***http://www.deq.state.id.us/water/dw/publicnotificationtemplates.htm***. These templates are in the form of Microsoft Word documents that can be downloaded and edited to reflect local circumstances. Regional DEQ and District Health Department offices can also provide sample notices for your use. The templates use language that reflects the most current understanding of the public health significance of coliform bacteria.
- ✓ EPA has a web site at ***http://www.epa.gov/safewater/tcr/tcr.html*** that contains **news about possible revisions of the TCR**. This site also offers a series of very informative "white papers" that address some of the major distribution system issues that may be considered in future rulemaking. Opportunities to provide advice and comment to EPA will be announced on this web site. If you have access to the Internet, you will probably want to monitor this web page from time to time. ■

Assistance for facilities construction

DEQ grant/loan program to mail letter of interest forms in February

During state fiscal year 2004, the DEQ will award grants and loans to eligible public drinking water systems to help them plan, design, and construct drinking water facilities. *Grants will be available for the planning portion of a project only.* The state fiscal year 2004 starts July 1, 2003.

The purpose of this assistance program is to help communities identify system problems, determine how to correct them, and complete construction.

All community and nonprofit noncommunity water systems are qualified to receive grants and loans but they must be in the fundable range of a fiscal 2004 priority list to do so.

Qualified public water systems can get on 2004 lists by completing grant and loan Letter of Interest (LOI) forms. These will be mailed to all qualified systems during the first week of February 2003.

We urge you to provide the information requested in the LOI forms and to return them by the 30-day deadline.

DEQ staff engineers in our six regional offices around the state will rate and rank projects based on public health and "readiness-to-proceed" criteria. Information in the completed LOI forms and departmental records will be used to do the ratings.

The DEQ will begin awarding grants and loans in July of 2003. Highest rated projects will be invited to apply first. Assistance will be awarded until funding resources are exhausted.

LOI forms for wastewater grants and loans will also be mailed in February. ■

For Individual Customers

Emergency Disinfection of Drinking Water

If your current source of water is contaminated, it should be treated before being used for drinking, cooking, or brushing teeth. There are many ways to purify water. No single method is perfect. Often the best solution is a combination of methods.

Two easy purification methods are outlined below. Before purifying, let any suspended particles settle to the bottom, or strain them through layers of paper towel or clean cloth.

Boiling. Boiling is the safest method of purifying water. Vigorous boiling for one minute will kill any disease-causing microorganisms present in water. Boiled water will taste better if you put oxygen back into the it by pouring the water back and forth between two clean containers several times.

Using Liquid Bleach. You can use household liquid bleach to kill microorganisms. Use only regular household liquid bleach that contains 5.25 percent sodium hypochlorite. Do not use scented bleaches, colorsafe bleaches, or bleaches with added cleaners.

Add 16 drops (about 3 teaspoons) of liquid bleach per gallon of water, stir and let stand for 30 minutes. If the water does not have a slight bleach odor, repeat the dosage and let stand for another 15 minutes.

Note: *These measures will kill most microbes but will not remove other contaminants such as heavy metals, salts and most other chemicals. If you suspect the water is unsafe because of chemicals, oils, poisonous substances, sewage, etc., do not use the water for drinking.*

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Coliform Bacteria Fact Sheet

Background/Overview

Biological organisms are among the oldest health threats to drinking water quality and the agents currently responsible for most waterborne diseases. They are the most common contamination incident water operators will encounter. Organisms known to cause disease include bacteria, protozoa, and viruses; some algae and helminths (worms) may also be capable of producing disease. These disease-causing organisms thrive in the intestines of warm-blooded animals. They are easily transmitted to drinking water if the feces of an animal contaminates a water supply for which there is not a suitable disinfection. Potential sources of contamination include sewers, septic systems, and animal feedlots.

Role of coliforms in detecting contamination

Unfortunately, specific disease-producing (pathogenic) organisms present in water are not easily identified. It would be very difficult, expensive, and time-consuming to monitor for them. For this reason, it is necessary to select an easily measured "indicator organism," whose presence indicates that pathogenic organisms may be present. A group of closely related bacteria, i.e., the total coliform, has been selected as an indicator of harmful organisms in drinking water.

Sources of coliform bacteria

Total coliform (TC) bacteria are common in the environment (such as soil) and the intestines of animals and are generally not harmful. Fecal coliform (FC) and Escherichia (*E. coli*) bacteria are found in greater quantities than total coliform in animal fecal matter. *If FC or E. coli is detected along with TC in drinking water, there is strong evidence that sewage is present; therefore, a greater potential for pathogenic organisms exists.*

Responses to coliform detection

Public drinking water systems (PWS) must monitor on a routine basis. If FC, or *E. coli* is detected in the distribution system of a PWS, the system must be disinfected. In most cases, this includes emergency chlorination, which can last for two to five days. At the same time a system is being disinfected, customers of the PWS are advised to vigorously boil their drinking and cooking water for one minute before using it. Once the system has been disinfected and flushed, the system tests the water again for coliform bacteria. If none are detected, the Boil Advisory is lifted.

If only TC is detected (without the presence of fecal coliform or *E. coli*), the source is most likely from contamination from the environment, introduced during construction or while repairs to plumbing or a water main were underway. The system will identify the source of contamination, correct the problem, and thoroughly disinfect its system. The public will also be notified of the situation; *however, unless unusual circumstances exist to cause particular concern about the safety of the water, a Boil Advisory will not be issued.*

Exceptions

Total coliforms are not perfect indicators of the actual or potential presence of harmful organisms. Some disease-producing organisms, especially protozoa such as *Giardia* and *Cryptosporidium*, are able to withstand treatment, which kill the total coliform. These two protozoa are often found in surface waters (the principal carriers of these organisms) contaminated by human sewage or wildlife. However, for the majority of PWSs, this is not a significant threat since most PWSs obtain their water from wells rather than surface-water sources such as rivers and lakes. For those PWSs that use surface water, a combination of coagulation, filtration, and disinfection has been successful and is recommended to reduce the risk of *Giardia* or *Cryptosporidium* contamination.

Health effects

Symptoms of waterborne diseases may include gastrointestinal illnesses such as severe diarrhea, nausea, and possibly jaundice as well as associated headaches and fatigue. *It is important to note, however, that these symptoms are not associated only with disease-causing organisms in drinking water.* They may also be caused by a number of other factors. In addition, not all people will be affected to the same degree; young children and the elderly are usually more susceptible.

For more information

Additional information about total coliform bacteria is available from the drinking water staff at your local regional DEQ office or local district health department.

ARSENIC UPDATE

- **Arsenic survey.** December 31, 2002 concluded the non-community non-transient (NCNT) free arsenic sampling survey sponsored by Idaho DEQ. The department received over 100 samples from the 250 eligible systems for this one-time free sampling opportunity. Only 6 of the samples were reported higher than the revised 10 ppb maximum contaminant level (MCL). Idaho DEQ appreciates the opportunity to provide this service and thanks the systems that assisted us with this effort to evaluate the impacts of the new arsenic rule. The new rule sets the arsenic MCL at 10 ppb effective January 23, 2006.

- **Arsenic treatment demonstration.** In March of 2002, USEPA announced the small system arsenic treatment demonstration project and solicited small community water systems nationwide to apply. Over 2002/2003, USEPA pledged to spend over $20 million on the research and development of affordable arsenic treatment technologies for small systems. USEPA selected the city of Fruitland, Idaho as one of the seventeen host sites for the project. More information can be found at USEPA's research site at: *http://www.epa.gov/ORD/NRMRL/arsenic/index.html*

Radiologicals Reminder

Community water systems have until December 2003 to submit samples for radiologicals if they wish to be eligible for "grandfathering." For EPA's Radiological Rule, "grandfathering samples" means that a system can use monitoring results taken between June 2000 and December 2003 to substitute for initial monitoring requirements beginning in 2004.

Samples should be taken from each entry point, which is a point after any treatment but before distribution. Please be aware that the state lab is flooded with samples and it will take several months to process them. For more information on the Radiological Rule, please link to the following web page: *http://www.epa.gov/OGWDW/rads/implement.html.*

- **Seek funding for arsenic treatment now.** Idaho DEQ's grant/loan program will be sending out letters of interest to qualified public water systems in February for state fiscal year 2004, which begins July 1, 2003. Grants are available for the planning portion of a project and low-interest loans are available for construction. See related article, "Assistance for facilities construction," on page 2 for more information. ■

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